plain, leaving a few isolated survivors in favorable spots in the mountains.[1] Strains from this ancient stock which spread from the ancient region into the lower Mississippi valley have become modified in foliage, but not in floral characters.

The writer is indebted to Dr. S. F. Blake, who examined his specimen of *Helianthus kentuckiensis*, and suggested its relationship to *H. atrorubens;* and to Dr. Elmer D. Merrill, of the New York Botanical Garden, who generously loaned the type specimen of *H. atrorubens*, var. *pubescens*.

THE STATE UNIVERSITY OF IOWA.

SOME FIELD NOTES: A NEW VARIETY AND SOME FORMS OF PLANTS FROM THE MIDDLE WEST; ALSO TWO FORMS FROM MASSACHUSETTS

H. C. BENKE

PURSUING the study of the wild asters in the Chicago Region in the fall of 1929 in continuation from previous years, special attention was given by me to such details as leaf-form, branching habit, association in the field and coloration.

The growing season of the year 1929 in this region seems to have been subject to a most favorable combination of climatic influences resulting in an uncommonly fine development of coloration in plants. And never was there a more gorgeous display of the autumnal tintings in vegetation.

The region about Chicago in a great semi-circle to the north, west and south of some fifty miles, with a twenty-mile tangent southeast into the Valparaiso Moraine in Indiana was revisited and specimens, with field notes, were secured of promising material. Great masses of white, blue and purple were in continued procession—for the genus Aster predominates in our late fall landscape. Other specimens, besides asters, were also secured—all in very limited amounts, since only the new or novel was sought.

In early spring a trip to the southwest as far as New Mexico to near the Rio Grande was made, over Kansas and the Panhandle

[1] See Fernald, M. L., Specific Segregations and Identities in some Floras of Eastern North America and the Old World, RHODORA xxxiii. 25–63 (1931), also Small, J. K., Altitudinal Distribution of Eastern American *Iris*, Jour. N. Y. Bot. Gard. xxxii. 49–66 (1931).

Plains of Oklahoma and Texas. This was followed by a summer trip over central Kansas. A short summer trip northward, into Wisconsin was also undertaken and a few interesting specimens for the herbarium were obtained on each tour.

Some of this material has been distributed to other workers for their study, but my own examinations aided by such of my field notes as are of taxonomic interest have revealed findings which can now be reported. Particularly, the favorable conditions before mentioned have been utilized in observations on color forms.

The suggestion might here be made that the separation of a new variety or form from a species, based mainly or wholly on color, should not be attempted except from careful observation in the field, or from reliable and authentic notes of the collector. Colors are unstable in dried specimens, rendered even more so by chemical treatment in and for the herbarium. The most startling metamorphoses may take place. To cite a conspicuous example; the floral ligules of *Lactuca Scariola* L. are of a golden yellow in the field, but turn to blue in drying! So the taxonomist describing the plant, wrongly as to color of flowers from an herbarium specimen, would not agree with its true delineation in the field.

Another reason against undertaking taxonomic color work away from the field of living plants lies in the fact that they often have flowers of the intermediate gradations or shades from one color to another; for example from purple-blue to purple-red, or from blue to white, or vice versa.

In taking the long trip before mentioned, to the Rio Grande, one will note with interest how the mesophytic flora of the Middle West gradually changes to the xerophytes of the New Mexico desert. Notes on range of plants were obtained—one of which may here be noted, the case of *Oxybaphus nyctagineus*. This species was an almost constant companion along the railroad-bed as far west and south as Waynoka, Oklahoma. Other species of *Oxybaphus*, however, of sparser growth came into evidence.

On the Panhandle Plains of Oklahoma quite a showing of the first spring flowers enriched the landscape after the middle of April. In places the prairies were bright with them, as *Androstephium coeruleum* (Scheele) Greene, *Corydalis aurea* Willd. var. *occidentalis* Engelm., *Lesquerella gracilis* (Hook.) Wats., *Astragalus lotiflorus* Hook., *Astragalus crassicarpus* Ker., *Astragalus mexicanus* A. DC., *Phlox longi-*

folia Nutt., *Lithospermum angustifolium* Michx., *Oenothera laciniata* Hill, *Anemone caroliniana* Walt.; species of *Comandra, Actinea* and *Hymenopappus* and the splendid *Castilleja sessiliflora* Pursh. Here occurred, also, the curious dwarf *Celtis occidentalis* L. var. *pumila* Muhl. about a meter in height, in maturity. Ordinarily *Celtis* species are large forest trees.

Soon afterwards (about the middle of April), in the Panhandle Plains of Texas the early grasses and sedges, as *Bromus unioloides* (Willd.) HBK., *Eleocharis palustris* (L.) R. & S. and *Carex stricta* Lam. were coming into bloom, along with a flora similar to that just listed from Oklahoma with added species, among them, *Ranunculus Cymbalaria* Pursh and *R. circinatus* Sibth., *Lesquerella ovalifolia* Rydb., *Parosela formosa* (Torr.) Vail, *Sophora sericea* Nutt., *Vicia exigua* Nutt. and *V. sparsifolia* Nutt., *Linum rigidum* Pursh and *L. Berlandieri* Hook., *Glossopetalon spinescens* Gray, *Euphorbia Fendleri* T. & G., *Hybanthus verticillatus* (Ort.) Baill., *Gaura coccinea* Pursh, species in *Lomatium, Cymopterus montanus* T. & G., *Convolvulus arvensis* L., *Gilia acerosa* (A. Gray) Britton, *Lappula texana* (Scheele) Britton, *Lippia cuneifolia* (Torr.) Steud., *Pentstemon albidus* Nutt., *Scutellaria resinosa* Torr., *Pyrrhopappus scaposus* DC., *Aster Leucelene* Blake, *Townsendia grandiflora* Nutt., *Erigeron commixtus* Greene and *Berlandiera lyrata* Benth.

These lists are of interest as indicating the flowers in earliest spring bloom on the plains of the Oklahoma and Texas Panhandles.

The species *Astragalus mollissimus* Torr. appears to be most in evidence about Clovis, New Mexico.

Proceeding south over New Mexico in early May the flowering season becomes well advanced with an array of species whose listing will not be attempted here, but a few having uncommon characteristics, from the southeast part of the state, in the region about Hagerman and Carlsbad, may be cited, specimens of which were collected on the trip and deposited in the Field Museum Herbarium:

Astragalus Nuttallianus DC., *Hoffmanseggia densiflora* Benth., *Euphorbia acuta* Engelm., *Ammoselinum Popei* T. & G., *Cryptantha crassisepala* (Gray) Greene, *Plantago erecta* Morris, *Baccharis Wrightii* Gray and *Verbesina nana* (Gray) Robinson.

During the summer trip to Wisconsin a jaunt was made into the wonderful region, northeast of Two Rivers, where evergreen species parallel the sand dunes of Lake Michigan for miles. From here a

curious case of rufescence must be reported. With a plant life, along these narrow ridges, composed almost entirely of evergreens, the large patches, meters in extent, of *Arctostaphylos Uva-ursi* (L.) Spreng. are most luxuriant. The very striking occurrence here was the fact that some of these colonies were of plants entirely green—the leaves being of a lustrous, summer verdure well known in this species; while in other colonies they were of a bright magenta-red, a royal purple, in the ends of the branchlets ranging from about five in number to twenty-five, while the older leaves were of the usual green color. The young leaves became progressively changed to green as they became older and the branches of the plants grew longer, always the younger leaves purple-red and the older, green. This quality was common to an entire colony, sometimes more extensive than a colony wholly green, sometimes less so, but growing on the same sandy soils, at similar elevations of dune ridges and in openings between taller evergreens (*Pinus resinosa* Ait., *Pinus Strobus* L., *Juniperus communis* L. var. *depressa* Pursh, *Thuja occidentalis* L. etc.) under similar conditions of light and shade.[1]

A rare plant, and one hardly suspected as having been able to survive in Manitowoc County, Wisconsin, was found near Wells (Brillion R. R. 3) in the depths of a small swamp, a mile to the south, on June 20, 1921. It is the beautiful *Cypripedium acaule* Ait.[2]

Some twenty years ago, when the writer resided in that neighborhood, *Hieracium aurantiacum* L. was a rare plant. It has become so common that it must now be classed among the pernicious weeds, in spite of its great beauty![3]

During my summer trip over parts of Kansas many field notes were taken but only a few of these can here be reproduced.

Near Kansas City, Missouri, was seen the unusual representation of both *Impatiens pallida* Nutt. and *Impatiens biflora* Walt., growing together in considerable colonies on the springy bluff-sides.

Paronychia Jamesii T. & G. was found in great fields, but so only in one locality—Hoisington, Kansas.

Stenosiphon linifolium (Nutt.) Britton makes a very pretty showing, when massed in the fields as about Concordia, Kansas, but nothing can compare to the great, golden blooms of *Oenothera missouriensis*

[1] Specimen in Field Museum, *Benke* No. 4953.
[2] In Field Museum and Gray Herbarium, *Benke* No. 4960.
[3] Wells (Brillion R. R. 3), Wis. *Benke* No. 4965. Subject of an article, by myself, in Brillion (Wis.) News, page 1—July 5, 1929, "*Pretty Wildflower is Becoming a Weed.*"

Sims[1] coming almost out of the ground and decking the hill-side pastures about Strong City, Kansas. The flowers, up to 15 cm. across, remind one of some of the great blooms of tropical regions.

At Cottonwood Falls, Kansas, and Strong City nearby were seen many plants (of a weedy nature there) of *Chaerophyllum procumbens* (L.) Crantz, growing together with others qualifying as *C. Tainturieri* Hook. It here appeared as though the classification depended upon the age of the fruits—as to width of intervals between the ribs on their faces. Another case demanding further study, it seems, as to characteristics in respect to age is that of *Vernonia illinoensis* Gleason to differentiate from *V. missurica* Raf. Specimens from Claflin, Kansas, apparently have their pappus in purplish tinge when young, turning tawny when old, which may lead the taxonomist to different conclusions in the same plant, the main character being in the color of the pappus.

The hill-sides about Strong City have yet another characteristic plant to grace them—*Erigeron philadelphicus* L., all with rays snow-white in this region and of very healthy, vigorous growth.

A few notes from the Chicago environs may be given on some outstanding species. Asters, though so abundant here, are rare in the species *Aster macrophyllus* L. To the north, about Glencoe there occur plants of this species in which the rays are not the usual white, but of a rose-color, rather pale, however (*Benke* 4939).

For the first time in my long experience with asters in the field, that rare and beautiful plant with its snow-white rays, *Aster novae-angliae* L. forma *genesseensis* House (*Benke* 4942) was found near Schiller Park (Cook County), Illinois, Sept. 23, 1929 and again, two days later, several miles farther to the southwest near Berkley.[2]

Aster ericoides L. forma *caeruleus* (Benke) Blake[3] (*Benke* 4947) was, for the second time, found near Schiller Park. This charming aster—the type—was first seen near Bushnell, far down-state, Sept. 29, 1927 (*Benke* 4373). Here, again the same blue rays (not purplish, but with the faintest suggestion of it) were in evidence; with the same strict habit, apparently lifting it above the white-rayed plants of *A. ericoides* in proximity; and the plainly later anthesis, so that, if seen in the field, it would appear to be eligible to varietal rank.

[1] Specimens in Field Museum and in Gray Herbarium, *Benke* No. 5153.
[2] In Field Museum and in Gray Herbarium, *Benke* No. 4941.
[3] See Benke, RHODORA **30**: 77–79. 1928 and Blake, RHODORA **32**: 139. 1930.

The collecting trips of 1929 are uncovering various novelties, some of which can now be listed as below:

I. To the north of Chicago there is a great marsh—the famous Skokie—now partly drained by ditching and road-building operations. At one time it was a number of miles in length and a half mile wide in places, and is still no inconsiderable stretch of swampy marsh. The plant association here includes vast fields of Aster species and their kin, the beautiful Boltonias, growing in luxuriant profusion. They are particularly at home along the ditches and rivulets, formerly centering about a sluggish but considerable stream.

Far beyond the borders of the marsh, near some streamlets in the central reaches, we may see some patches of magenta red (rose-red, in fact) among the great fields of white. These are the rare Boltonias of a color (but more in rose) resembling that of a somewhat similar variety with larger flowers and wider leaves sometimes cultivated—but here we are far away from any garden.

The plant is worth distinguishing with a name:

BOLTONIA ASTEROIDES (L.) L'Hér., forma **rosea**, f. nov., a forma typica ligulis roseis differt.—ILLINOIS: Glencoe, Cook County, Oct. 6, 1929. *H. C. Benke* 4940 (TYPE, Field Museum).

With the species; rays rose-red. No other specimen in Field Museum Herbarium.

II. In the valley of the Arkansas River at its great bend southward in central Kansas nestles a beautiful city named for this feature—Great Bend. The valley here has a distinctive flora typical of the river bottoms of the central plains. Springy places with saturated areas about have their own plant associations, with *Aster exilis* Ell. very conspicuous. Here, also, occur *Heteranthera limosa* (Sw.) Willd. in great numbers. The flowers in their spathes show a deep blue color, but at one place there is a small colony of pure white ones. No intermediate tints being in evidence, the form may be named:

HETERANTHERA LIMOSA (Sw.) Willd., forma **albiflora**, f. nov., perianthio albo.—KANSAS: Great Bend, Barton County, Aug. 10, 1929. *H. C. Benke* 5127 (TYPE, Field Museum).

Like the species; perianth pure white.

III. Oklahoma, too, in its western parts is rich in the plains flora and an early-flowering feature is the dotted blue in parts of the landscape, *Androstephium coeruleum* (Scheele) Greene.[1] But here was one

[1] This name truthfully suggests the floral color, in this region—rather than *A. violaceum* Torr.

in pure white. The specimen was secured; a few others of the same color form being past anthesis were not taken and the luck which was trusted to, for finding further samples for duplicates, did not arrive that day though many more blue ones were seen.

ANDROSTEPHIUM COERULEUM (Scheele) Greene, forma **leucanthum**, f. nov., a forma typica non nisi perianthio albo differt.—OKLAHOMA: Mooreland, April 22, 1929. *H. C. Benke* 5004 (TYPE, Field Museum).

IV. High ridges and hills in long slopes rise from valleys far below in north central Kansas, each with its distinctive flora—very luxuriant in the valley. About Concordia, among its most common plant life is *Verbena stricta* Vent., acres in extent. Hardly, however, is it to be classed as a weed, for it thrives only in limited areas and at limited times, certain soil conditions seeming to be necessary for its maintenance.

The only area where the roseate-corolla form of this plant has been seen in my experience lies to the northwest of the city. Here, in a field of creek bottom some twenty acres in extent, was found an almost solid mass of the species in the usual purplish-blue, with lesser patches, here and there—about a quarter part of all—of the rose-colored form. This variation of color made a very charming impression in the landscape's features. With no intermediate colors to confuse, there can be distinctly separated:

VERBENA STRICTA Vent., forma **roseiflora**, f. nov., a forma typica differt corolla roseo-rubra.—KANSAS: Concordia, Cloud County, July 24, 1929. *H. C. Benke* 5164 (TYPE, Field Museum).

Form with species; corolla rose-red.

V. Visiting the old home farm where my youthful days were spent near Claflin, Kansas, patches of brilliant yellow showed at intervals along Cow Creek which runs through the land. These were masses of Silphium with flowering-heads unusually large and showy—not tall for this genus, but well massed. After careful comparison with much herbarium material and in literature, justification is felt for the separation of an interesting variety:

SILPHIUM INTEGRIFOLIUM Michx., var. **mesochorum**, var. nov., a forma typica differt caulibus glabris pallidissimis in sicco interdum discoloribus; folia ut bracteae involucri subtus glabra supra scabra setoso-ciliata; planta quam in forma typica humilior, capitulis paucis majoribus usque ad 7 cm. diam. speciosis; achaeniis circa 11 mm. latis, margine circa 2 mm. lato.—KANSAS: Claflin, Barton County, Aug. 19, 1929. *H. C. Benke* 5176 (TYPE, Field Museum).

With the species, but stem glabrous, very pale—almost white—

shining in the field, discoloring in parts in age or in drying; leaves all opposite, entire, except the lower cauline leaves which are remotely dentate with low teeth, glabrous below, harsh above and ciliolate on the margins; plants lower than the species, but the few heads much larger, up to 7 cm. in diameter, very showy; achenes about 11 mm. long with margins about 2 mm. wide.

The variety differs from other glabrous or subglabrous species or varieties in *Silphium*, as the var. *laeve* T. & G. of the species, *S. laevigatum* Ell., or *S. speciosum* Nutt., in some or all of such characters as its low stature (less than a meter in height) but large flower-heads with but medium-sized, broadly-winged achenes, and especially its very pale, almost white, shiny stem.

VI. When one travels, day after day, among fields of wild asters, with an endless array in masses of white, and in shades of blue and purple, a variation to red, or rose is most striking. In this region the growing season comes to a grand climax with a great burst of bloom of aster species, in the main.

In all the Chicago region the species *Aster pilosus* Willd. with its variety *demotus* Blake[1] is predominant. Great numbers of these have been seen by me for years past, always with the typical white rays, so my pleasant surprise may readily be imagined when a small colony—and another one not far away—of this species with most beautiful rose-red ray-florets suddenly came to view in an old field near Valparaiso, Indiana. The novelty is here named:

ASTER PILOSUS Willd., forma **pulchellus**, f. nov., a forma typica differt caulibus foliisque sparse hirsutulis; ligulis pulchre roseo-rubris. —INDIANA: Valparaiso, Porter County, Sept. 17, 1929. *H. C. Benke* 5083 (TYPE, Field Museum).

Differing from the species, which is typically very villous-hirsute, and from its var. *demotus* Blake, which is glabrous, in being but sparsely hirsutulous in all specimens examined from the two colonies. Rays a beautiful rose-red. The distinctions might give it varietal rank, but I prefer to leave it conservatively as a form, though the application of the terms variety and form are rather ambiguous.

Its vigorous growth, with its great masses of pretty flower-heads, gives this plant its name. No more beautiful aster, wild in the fields, is known to me.

Other specimens of my 1929 collection likely to uncover some-

[1] This variety and its species have been confused till recently with *A. ericoides* L. See Blake, RHODORA **32**: 136–140. 1930.

thing new in species, varieties or forms require further study before definite reports can be made on them.

VII. Through the kindness of Dr. Blake some interesting exchange material in *Compositae* has come into my hands, and two of the numbers of his collecting have yielded distinct color forms which are deemed well worthy of recording. So, we will now take a great stride from the Central West to New England—to Massachusetts. The first:

SOLIDAGO NEMORALIS Ait., forma **pallens** f. nov., ligulis et disco ochroleucis; ceteris ut in forma typica speciei.—MASSACHUSETTS: South Easton, Sept. 8, 1926. *S. F. Blake* 9656 (TYPE, Field Museum).

With the species; rays and disk very pale, cream color.

Dr. Blake's note states, "Rays and disk yellowish-cream color; at least two clumps of this form, normal form also present; open, gravelly ground."

When one considers the usual deep yellow color of this species (carried even into the bracts) it will be admitted that an interesting plant has been here disclosed by its collector.

VIII. The second form is one of *Aster linariifolius* L.

This fine species occurs in this region some forty miles to the westward in the morainic gravel hills about Crystal Lake and is very common to the southeast in the dune region of northern Indiana. It has never been my good fortune to come upon a white-rayed plant of this species.[1] An interesting separation of form can here be made:

ASTER LINARIIFOLIUS L., forma **leucactis** f. nov., a forma typica differt ligulis albis.—MASSACHUSETTS: Stoughton, Sept. 17–24, 1927. *S. F. Blake* 10514 (TYPE, Field Museum).

To quote the collector "Rays pure white, disk yellow; about 20 clumps, some of good size, scattered over stretch of 100 yards among the abundant lavender ones—in shrubby, gravelly field, Stoughton."

CHICAGO, ILLINOIS.

POTENTILLA TRIDENTATA, F. AURORA IN THE WHITE MOUNTAINS.—On August 5, 1931, I collected what appears to be *Potentilla tridentata*, f. *aurora* Graustein, RHODORA xxxiii. 211 (1931), between Tuckerman's Ravine and the summit of Mt. Washington, New Hampshire. The

[1] The only variation from the usual violet-blue (nearly blue) color of rays in this species which has been found by me is a specimen with rays considerably lighter in shade than common. It is, INDIANA: Inland Manor, Lake County, Sept. 18, 1925. (*Benke* 5088).